

LITERATURE CITED

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VARIATION OF SEED SIZE IN
ATRIPLEX PATULA VAR. *HASTATA* (L.) Gray

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Ungar (Rhodora 73:548-551, 1971) demonstrated seed dimorphism in *Atriplex patula* var. *hastata* (L.) Gray collected from saline marshes surrounding Lincoln, Nebraska. One kind of seed is small (1.0-1.7 mm) having a hard black testa and the other is usually larger (1.3-2.6 mm) having a soft yellowish-brown testa. Ungar (1971) shows a bimodal distribution of this condition. He has informed me that individuals of *A. patula* var. *hastata* do not yield equal numbers of each seed type, but he did not know the relative yields of each type.

In order to investigate this matter further, six lots of four to fourteen individuals each of *A. patula* var. *hastata* were harvested from an Alexander Township, Athens County, Ohio salt pan during October, 1971. Seeds were separated from fruits by chaffing. Small black seeds and larger brown seeds from each lot were counted (Table 1) and placed in separate envelopes. Samples from each category in each lot were placed on a piece of filter paper. With a dissecting

Table 1. Seed samples of *Atriplex patula* var. *hastata*.

	Lot					
	1	2	3	4	5	6
Number of plants	4	7	6	7	8	14
Total small seeds	255	961	87	1039	815	773
Sample size (sm. seed)	37	24	10	23	21	21
Total large seeds	14	72	28	56	63	25
Sample size (lg. seed)	14	22	13	9	18	16

Table 2. Size characteristics for seed of *Atriplex patula* var. *hastata*.

Seed size (mm)	Lot					
	1	2	3	4	5	6
	Number Sampled					
1.0		1		1		2
1.1	5	4		3	2	3
1.2	11	5	4	13	7	9
1.3	8	9	4	4	7	5
1.4	9	4	2	2	4	3
1.5	6		3		2	2
1.6	3	2	4	2	5	3
1.7	3		1	2	3	4
1.8	4	9		2	2	3
1.9	1	2		1	5	1
2.0	1	3	1	2	1	1
2.1		4	1		1	1
2.2		2	2			
2.6			1			

microscope and a calibrated ocular micrometer the diameter of each seed in each sample was measured (Table 2). By multiplying the reciprocal of the proportion of seeds sampled from each envelope times the number of seeds in each diameter size class an estimate of the absolute number of seeds in each size class was made (Table 3).

Table 3. Estimated number of seed in each size class in each lot sampled of *Atriplex patula* var. *hastata*.

Seed Size (mm)	Lot						Total Seeds
	1	2	3	4	5	6	
1.0		40		45		74	159
1.1	34	160		136	78	111	529
1.2	76	201	35	589	272	335	1508
1.3	55	361	35	182	272	185	1090
1.4	62	160	17	91	156	76	562
1.5	30		7		43	3	79
1.6	3	43	9	12	18	5	87
1.7	3		2	12	11	6	31
1.8	4	30	2	12	7	5	54
1.9	1	7		6	18	2	33
2.0	1	10	2	12	4	2	30
2.1		13	2		4	2	21
2.2		7	4				11
2.6			2				2

Figure 1 presents the estimated number of seeds in each size class in all lots. The log values for the estimated number of seeds in each size class in each lot are plotted in Figure 2.

These data indicate that rather than presenting equal numbers of seeds in each major size category, the large and the small of Ungar, there is a log normal distribution of seeds over each size class with considerably fewer seeds in the larger classes. They do not explain the presence of seemingly different colors of seeds; though pigmentation of the testa may be a product of pigment density and surface area with larger seeds having a lighter coloration due to more diffuse pigmentation. The data indicate that in the population seed size is log normally continuous, as opposed to bimodal. Also, the attendant observation of seeds of both colorations and major categories (large and small) on the

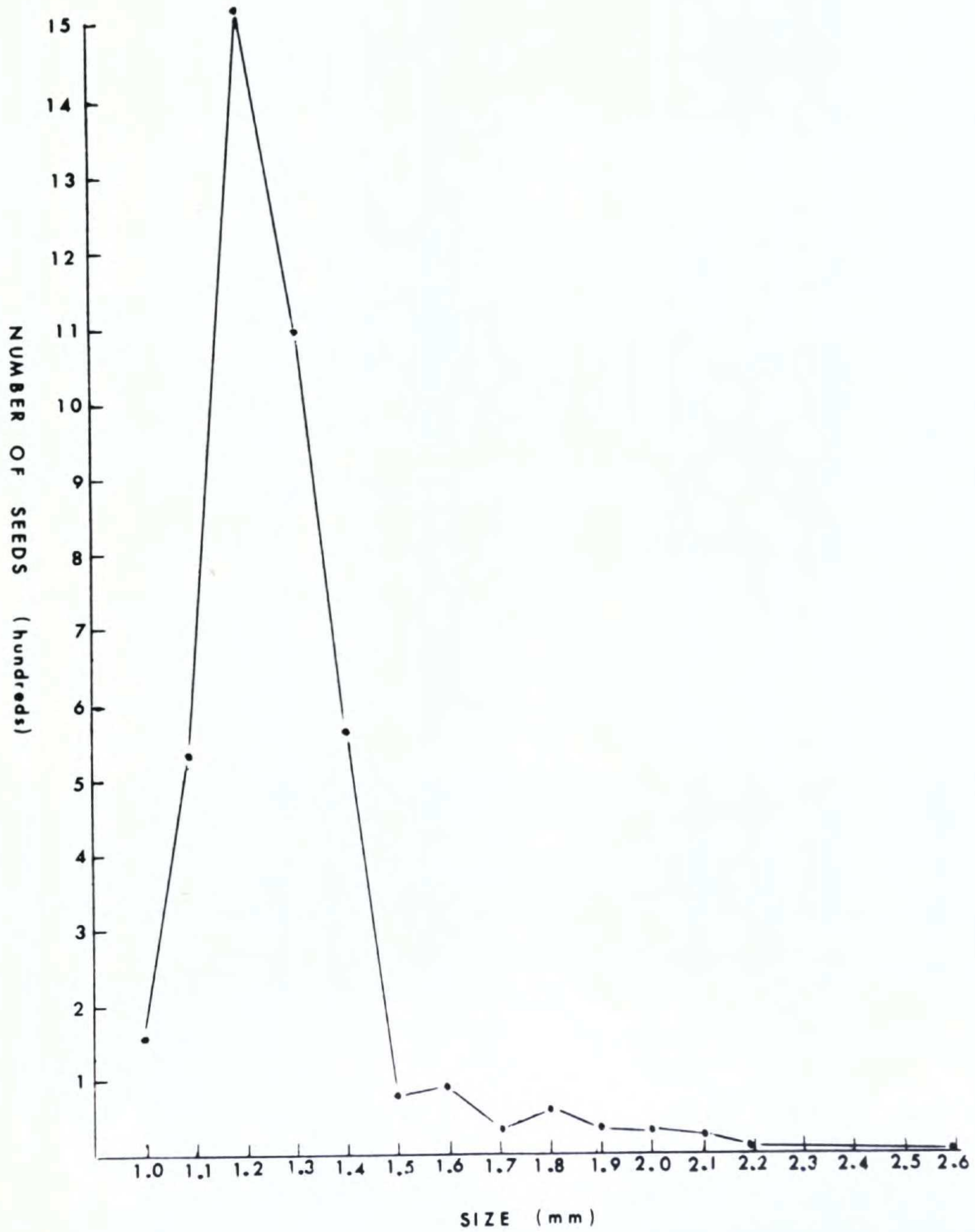


Figure 1. Estimated number of seeds in each size class for all lots of *Atriplex patula* var. *hastata*.

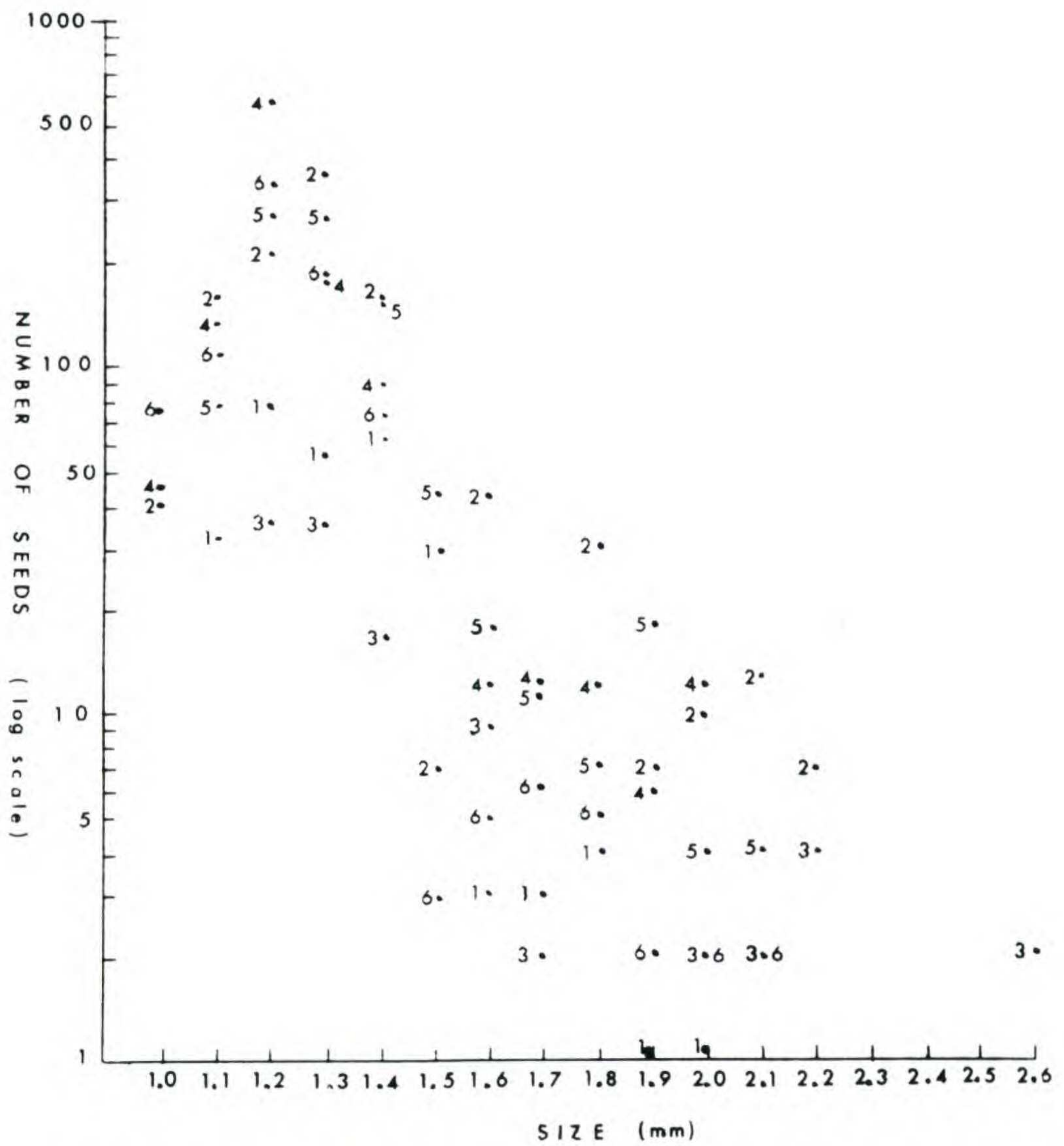


Figure 2. Log values for estimated numbers of seed in each size class for each of six lots of *Atriplex patula* var. *hastata*.

same plant indicates that seed morphism may be developmental.

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